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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/572,976

11/20/2006

John W. Frost

6550-000086/US/NPB

4573

27572 7590 08/11/2008  
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EXAMINER

SAIDHA, TEKCHAND

ART UNIT

PAPER NUMBER

1652

MAIL DATE

DELIVERY MODE

08/11/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/572,976	<b>Applicant(s)</b> FROST, JOHN W.	
	<b>Examiner</b> Tekchand Saidha	<b>Art Unit</b> 1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-45 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Election/Restrictions*

1. Preliminary amendment filed 3/22/2006 is acknowledged. Claims 1-45 are pending.
2. Restriction is required under 35 U.S.C. 121 and 372.
3. This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.
4. In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

**Group I**, claim(s) 1-11, drawn to a recombinant polypeptide that is or contains a KDPGal aldolase of about 190 to about 215 residues in length having at least one of the mutations: X10V, X28L or X28M, X42T, X85A, X154F, or X1961, said KDPGal aldolase having a higher specific activity for 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP) formation than the enzyme without said at least one mutation.

**Group II**, claim(s) 12-15 & 31-37, drawn to nucleic acid encoding the recombinant polypeptide of claim 1 and host cell comprising the said nucleic acid.

**Group III**, claim(s) 16-19, drawn to an enzymatic pathway capable of converting pyruvate and D-erythrose 4-phosphate (E4P) into 3-deoxy-D-arabino-heptulosonate-7-phosphate (DAHP), said pathway including at least one isolated or recombinant KDPGal aldolase.

**Group IV**, claim(s) 20-22, drawn to a method for the production of shikimate or a shikimate intermediate comprising (1) providing a recombinant cell containing nucleic acid encoding at least one KDPGal aldolase and at least one DHQ synthase, from which nucleic acid said cell can express those enzymes, and (2) growing said cell in a medium under conditions in which it expresses them; and (3) optionally, recovering at least one of DAHP, DHQ, DHS, or a further derivative thereof, from said medium or from said cell.

**Group V**, claim(s) 23-30, drawn to a method for converting pyruvate and E4P to DAHP, comprising contacting an isolated or recombinant KDPGal aldolase with a solution containing pyruvate and E4P.

**Group VI**, claim(s) 38, drawn to a process for preparing at least one of DAHP or a derivative thereof, said process including the steps of 1 ) providing-

(A) a supply of E4P and pyruvate,

(B) a KDPGal aldolase, and optionally a DHQ synthase, (C) an aqueous medium, 2) contacting in said medium, said KDPGal aldolase with said E4P and said pyruvate under conditions in which said KDPGal aldolase can catalyze the formation of DAHP from the E4P and pyruvate, and optionally contacting said DAHP with said DHQ synthase under conditions in which said DHQ synthase can catalyze the formation of 3-dehydroquinate from the DAHP;

3) optionally recovering at least one of DAHP, DHQ, DHS, or a further derivative thereof, from said medium.

**Group VII**, claim(s) 39, drawn to a kit containing a KDPGal aldolase preparation, with instructions for the use thereof to convert pyruvate and E4P to DAHP, and optionally with instructions for the conversion of said DAHP to at least one derivative thereof.

**Group VIII**, claims 40-45, drawn to a kit containing a cell capable of expressing a KDPGal aldolase, with instructions for the use thereof to convert pyruvate and E4P to DAHP, and optionally with instructions for the conversion of said DAHP to at least one derivative thereof.

For each of inventions I-VIII above, restriction to one of the following is also required depending upon the elected group. Therefore, election is required of one of inventions I-VIII and one of inventions (A)-(F).

(A). SEQ ID No: 1 (DNA).

(B). SEQ ID No: 2 (protein, *E. coli*).

(C). SEQ ID No: 3 (DNA).

(D). SEQ ID No: 4 (protein, *Klebsiella pneumoniae*).

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(E). SEQ ID No: 5 (DNA).

(F). SEQ ID No: 6 (protein, *Salmonella typhimurium*).

4. The inventions listed as Groups I-VIII and (A)-(F) do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical feature for the following reasons: The technical feature linking Groups I-VIII and (A)-(F) appears to be that they all relate to 2-keto-3-deoxy-6-phosphogalactonate (KDPGal) aldolase. According to the international preliminary examination report [IPER] claims 1, 2, 4-10 & 12-15 lack novelty as being anticipated by Accession Number Q8PLM9 (XP002317419, 1-Oct-2002) or Q8P9VO (XP002317420, 1-Oct-2002). Without a properly assigned SEQ ID NO: and without a proper numbering system to the mutant positions the references anticipate the claims.

Therefore, Groups I-VIII and (A)-(F) share no special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art. Furthermore, the products of Groups I-II & VII-VIII and (A)-(F) do not share a special common structural or functional feature while, the methods of Groups III-VI do not use the same reagents or produce the same results. In addition, the methods of Groups III-VI do not comprise all of the methods for making or using the products of Groups I-II & VII-VIII. Accordingly, Groups I-VIII and (A)-(F) are not so linked by the same or a corresponding special technical feature as to form a single general inventive concept.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims that depend from or otherwise

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include all the limitations of the allowable product claim will be rejoined in accordance with the provisions of MPEP § 821.04. Process claims that depend from or otherwise include all the limitations of the patentable product will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final-rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tekchand Saidha whose telephone number is (571) 272 0940. The examiner can normally be reached on 8.30 am - 5.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nashaat Nashed can be reached on (571) 272 0934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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August 4, 2008